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by his experiments shown that petroleum can be thus formed.

FINALLY, Moissan, in the *Comptes Rendus*, states it as his opinion that according to its geological relations the formation of petroleum is to be ascribed to three different causes: (1) the decomposition of organic substances under the influence of pressure and heat; (2) the purely inorganic reaction between water and the metallic carbids; (3) volcanic processes. In many localities it is possible that all three of these factors may have contributed to the formation of petroleum.

J. L. H.

#### SCIENTIFIC NOTES AND NEWS.

IN accordance with plans that we have already announced, the General Committee of the British Association for the Advancement of Science has decided that the next meeting will be at Bristol, under the presidency of Sir William Crookes.

SIR JOHN LUBBOCK has accepted the presidency of the International Congress of Zoology, which meets at Cambridge in August of next year. Sir William Flower was, as we regret to learn, compelled to resign the office, in view of the other pressing demands on his time and of medical advice.

PROFESSOR C. A. YOUNG, Professor A. A. Michelson and Professor E. S. Dana have been elected honorary members of the Philosophical Society of Cambridge University.

THE medals of the Royal Society will this year be awarded as follows: The Copley Medal to Professor Albert von Kölliker; a Royal Medal to Professor A. R. Forsyth; a Royal Medal to Sir Richard Strachey; the Davy Medal to J. H. Gladstone; and the Buchanan Medal to Sir John Simon.

SIR ROBERT BALL, President of the Royal Astronomical Society, has been presented with the Jubilee Medal.

DR. GEORGE H. HORN, the eminent entomologist, died at Philadelphia on November 25th. He was one of the Secretaries of the Philosophical

Society and was formerly Corresponding Secretary of the Academy of Natural Sciences. He had been until recently professor in the University of Pennsylvania, though his connection with that institution was chiefly honorary. Dr. Horn was only fifty-eight years of age, and his death, following those of Cope and Allen, is a further severe loss to the city of Philadelphia and to science in America.

THE Rev. Dr. Samuel Houghton, from 1851 to 1881 professor of geology in Trinity College, Dublin, died on October 31st, aged seventy-six years. He was an original and versatile writer, having made many contributions not only to zoology and physiography, but also on medical subjects, including an elaborate work on the Principles of Animal Mechanics.

By a private letter from Dr. J. Buttikofer we are informed that, although by the necessities of his recent appointment as Director of the Rotterdam Zoological Garden he has been obliged to leave Leyden Museum, where he has spent so many happy years, and which contains nearly all the zoological collections made by him in different countries of the world, he hopes, that as Leyden is distant but three-quarters of an hour from Rotterdam, to be able to do some ornithological work there. He is now engaged in finishing his report on the ornithological results of the Borneo Expedition, which he accompanied as zoologist, and of which some account was printed in SCIENCE of April 23, 1897.

PROFESSOR R. A. PHILIPPI, who, for forty-three years, has been Director of the National Museum in Santiago, Chile, having reached the age of ninety years, has resigned, and is succeeded by his son.

A MONUMENT to the eminent surgeon, the late Professor Billroth, was unveiled in Vienna on November 7th. Professor Gussenbaur, formerly assistant to Professor Billroth, made the principal address.

A BUST of Michael Faraday was unveiled at the Michael Faraday Board School, London, on November 15th. The bust, which is of white marble, was presented to the School by the managers of the Royal Institution of Great Britain, and is a copy of the original bust exe-

cuted by Matthew Noble. A brass tablet on the adjacent wall bears the following inscription: "Michael Faraday, natural philosopher, D.C.L., F.R.S., born at Newington, Surrey, September 22, 1791. He was a patient student, an eloquent expounder and a brilliant illustrator of the laws of nature. Fullerian Professor of Chemistry in the Royal Institution of Great Britain, 1833 to 1867. Faraday's noblest monument is his 'Experimental Researches in Electricity and Magnetism' from 1831 to 1851. He died at Hampton Court-green, August 25, 1867, and was interred in Highgate Cemetery."

LIEUTENANT PEARY sailed on the *Lucania* on November 27th and will lecture in Edinburgh, after which he will try to find in Scotland a vessel of from 300 to 500 tons register for his next expedition to the north.

THE steamship carrying the Belgian Antarctic Expedition has safely reached Rio Janeiro and left for Buenos Ayres on October 28th.

MM. RAOUL and Mary have returned to Paris from a governmental mission to make researches into the indigenous plants of the Malay peninsula, with a view to determine whether any of them are of use for pharmaceutical or commercial purposes.

PROFESSOR JADERIN, of Stockholm, has, according to the *New York Evening Post*, proposed to the Academy of Science of that city that it arrange with the government for a preliminary expedition, with Russia's cooperation, to go to Spitzbergen next summer, and there prepare for the final measurement of a degree of latitude in 1899 and 1900, with a view of obtaining more exact knowledge of the earth's form.

LIEUTENANT OLUFSEN, who returned last spring from Central Asia, will next year fit out a new expedition to the Pamir regions in order to make geographical and ethnographical explorations in the northern part of the Wakhan valley. The expenses of the expedition, which will last two years and include two scientific students, will be paid from the Carlsberg fund of the Danish government.

THE New York Park Board approved, on November 22d, the general plans of the

zoological gardens in Bronx Park. There was no opposition to the plans at the public hearing.

THE Meteorological Institute of Berlin celebrated the fiftieth anniversary of its foundation on October 14th. Dr. von Bezold, Director, made an address, in which, according to *Die Natur*, he stated that the Institute had in North Germany 188 stations of the first class and nearly 2,000 smaller stations.

A SMALL marine laboratory, says *Nature*, was opened at Cullercoats on the 21st ult. by Principal Gurney, of the Durham College of Science, Newcastle-on-Tyne. The laboratory is the result of the public-spirited generosity of John Dent, Esq., the Vice-Chairman of the Committee. The laboratory was formally handed over to the Sea Fisheries Committee, to be worked in conjunction with the Durham College of Science, Mr. Meek being placed in charge of the scientific operations. A large company assembled, representing the Sea Fisheries Committee, the College of Science, the Natural History Society and the County Council.

THE Subtropical Laboratory of the United States Department of Agriculture, at Eustis, has been discontinued, but work will be done at Miami, Florida. Mr. Walter T. Swingle and Mr. H. J. Webber, who had charge of the laboratory at Eustis, are at present in Washington.

THE Smithsonian Institution has acquired the Hallett Phillips collection of Indian implements and antiquities from the Potomac valley.

MR. P. A. B. WIDENER, of Philadelphia, has given his residence on Broad street for a branch of the Free Library. The value of his gift is said to be one million dollars.

THE Annual Report of the British Board of Agriculture states that during the financial year 1896-7 the sum of £6,950 had been distributed to fourteen different educational institutions. The grant to the Durham College of Science was increased to £1,000, and that to Oxford University to £800. The Board recommends that a chair of agriculture and forestry be established at Cambridge University.

As the result of the preliminary examination made by Colonel Sir Thomas Holdich, the well-

known head of the Indian Survey Department, whose services were lent to the Ceylon government last winter by the government of India, a new survey is to be made of the island. The *London Times* states that the cadastral survey will be on a scale of 10 in. to the mile and the topographical on one of one in. to the mile. The triangulation and topographical survey will be completed in five or six years, but considerations of expense will cause the cadastral survey to be spread over a period of 25 years and to be restricted to crown lands and lands of doubtful ownership. The existing maps of Ceylon are full of errors, and for every grant made out of crown lands a special and expensive cadastral survey of the locality had to be executed.

THE Pirogof Museum of Surgery and Anatomy, in St. Petersburg, the plans for which we have already noted, was opened at the beginning of the present month. The building will serve not only as a museum, but also as the place of meeting of all the St. Petersburg medical societies. The \$30,000 bequeathed for the purpose by Mme. Musin-Pushkin has been doubled by subscriptions, and some endowment remains after the cost of the building has been defrayed.

THE International Congress on the Protection of Birds, to which we have already called attention, opened at Aix-en-Provence on November 9th. The *London Times* states that the protection of insectivorous birds useful to agriculture was the chief matter discussed, and it was decided to forward to the governments of Europe, through the French Minister of Foreign Affairs, the resolutions that were formulated. Public educational bodies are also to be approached in order to obtain, if possible, the serious consideration of this important subject by schoolmasters and government school inspectors. Numerous French and Italian agricultural, horticultural and sporting societies were represented at the Congress, and delegates from the Selborne Society and the Society for the Protection of Birds were also present.

THE Civil Service Commission announces that on January 8, 1898, an examination will be held at Washington, D. C., and other places

throughout the United States, for the position of Computer in the Nautical Almanac Office. Three vacancies are to be filled and only men are eligible.

THE University of Cambridge has after a long delay received \$5,000 bequeathed by the late Dr. Joseph Gedge, who died in 1870 while with Sir Samuel Baker at Khartoum. The fund is for the establishment of a biennial prize for original research in physiology. It is open only to graduates of the University of more than five and less than seven years' standing.

DR. HUGHLINGS-JACKSON will give, on December 8th, the first lecture under the Jacksonian lectureship, established by the Neurological Society of London in his honor.

PROFESSOR OLIVER LODGE will deliver a course of six Christmas lectures (specially adapted to young people) on 'The Principles of the Electric Telegraph' at the Royal Institution, beginning on December 28th.

PROFESSOR ROYCE, of Harvard University, will deliver, at Cambridge, during the present year, six public lectures on 'Social Psychology.'

AT the meeting of the Botanical Club of the University of Chicago on November 23d Professor C. F. Millspaugh, Curator in Botany at the Field Columbian Museum, gave an account of his explorations in Yucatan, made on behalf of the Museum.

DR. H. C. PARKER gave, on November 29th, the first lecture in the course given annually by the New York Academy of Sciences. His subject was 'Recent Explorations in the Rocky Mountains of Canada,' including an account of the first ascent of Mount Lefroy, made by him last summer.

THE first of the Columbia University lectures in cooperation with the American Museum of Natural History will be given by Professor Kemp on Saturday, December 4th, and the two following Saturdays. The subject of his course is 'The Formation and Structures of the Crystalline Rocks.'

PROFESSOR GEORGE H. DARWIN, of Cambridge University, will lecture at Columbia University on the afternoon of December 10th,

nis subject being 'The History of the Earth and of the Moon.'

At the last meeting of the Zoological Society of London it was reported that the additions to the Society's menagerie during the months of August, September and October were 435 in number, amongst which special attention was called to a male and two females of a large deer from the Altai Mountains, probably referable to *Cervus eustephanus*, and apparently different in species from any deer previously exhibited in the Society's gardens, and also to a young male of the Caucasian wild goat (*Capra caucasica*). The total number of visitors to the Society's gardens during the months of August, September and October was stated to have been 278,253, representing an increase of 55,283, as compared with the number for the same period in 1896. From this source alone an increase of £1,344 19s. had been received during the same period.

MR. L. O. HOWARD, of the Department of Agriculture, has been studying the work of the Massachusetts Gypsy Moth Commission in the neighborhood of Malden and Medford, with a view to the preparation of a special bulletin of the Division of Entomology, describing the process of extermination employed. Agent O. A. Hubbard, of the Committee, has been temporarily detached and detailed by the State Board of Agriculture to study the region infested by the brown-tail moth and warn property holders of the danger and the need of using active measures for its destruction.

MR. H. A. MORGAN gives, in Bulletin No. 48 of the Louisiana Agricultural Experiment Station, some interesting observations on *Trissolcus murgantiæ*, an important parasite in the eggs of the harlequin cabbage-bug in Louisiana. He finds that eggs of the cabbage-bug pierced by the parasite on July 20th produced adult parasites on July 30th, showing the entire life cycle of the parasite to be ten days. In August 60% of the eggs of the harlequin bug contained these parasites. Experiments are being conducted with a view to the introduction of this parasite into Kentucky and Ohio.

SINCE the *Medical News* was removed to New York, giving that city three of the four leading

medical weeklies of America, the scientific and medical men of Philadelphia have felt the need of a good weekly journal. This will be filled after the first of January by the publication of the *Philadelphia Medical Journal*, to be edited by Dr. George M. Gould, and published by the Philadelphia Publishing Company, with a capital of \$30,000, which we understand has been fully subscribed. The trustees consist of the leading physicians and medical professors of Philadelphia, the different schools being duly represented.

*L'Intermédiaire des biologistes*, the plans for which we announced sometime since, has now begun publication, the first number being dated November 5th. It will be published twice a month, and the present number contains twenty-four pages. In addition to an introduction we find a short article by M. Marey, advocating the plan brought forward by him at the recent meeting of the French Association in favor of an international control of physiological instruments; forty-six questions to which replies are requested; the contents of the special journals of zoology, botany, physiology and psychology and short descriptions of three instruments. The journal throughout shows the psychological interests of Professor Binet and his associates in the editorship. In the introduction it is stated that a complete bibliography of the literature, so far as it is contained in other journals, will be given, but we think that the magnitude of this undertaking is scarcely realized. The series of questions is a feature that has, perhaps, not been undertaken in a scientific journal and may prove of value. Among the 34 'collaborateurs' there are two Americans, Professors Minot and Baldwin, and one Englishman, Dr. Sherrington. The price of subscription for America is 12 fr., to be sent to the publishers, Schleicher Frères, Paris.

THE last issue of *Industries and Iron* states that it is the first newspaper produced in Europe by the aid of the Lanston Monotype type-casting and composing machine. The whole of the matter in the body of the paper has been printed from types composed and justified into lines on the keyboard machine,

and the jacquard or perforated paper so produced has enabled the casting and setting into lines and galleys of the finished matter presented.

THE new rules of the United States Patent Office, which go into effect on January 1st, contain some important alterations. Hereafter no invention can be patented if it has been described two years or more before the filing of the application, or more than seven months after a foreign patent has been allowed. On the other hand, the duration of an American patent is not limited by its expiration in other countries.

THE South African Republic has passed an amendment to their patent laws which is an ingenious method of collecting revenue. Only a small fee is required for granting the patent, but for each period for which it is extended an additional payment is required. Thus, for example, from eleven years to the limit of fourteen years \$1,000 is required.

A DEPUTATION from the Manchester Chamber of Commerce was received by the President of the British Board of Trade on November 17th, the object of which was to call attention to the fact that patent rights were granted to foreign subjects in Great Britain for inventions which cannot be patented in their own. It was stated that very serious injury was inflicted upon British industrial interests in consequence of this inequality, and it was asked that the Patents Act of 1883 should be amended so as to remove the inequality, and that the duration of any British patent granted to a foreigner should not exceed the term of his patent in his own country. The deputation also desired that, as complementary to this amendment, the British representative at the forthcoming congress of the international convention for the protection of industrial property, to be held in Brussels next month, should be instructed to support the propositions for the alteration of the rules of the convention, which would permit the amending legislation in question.

MR. CHARLES T. RITCHIE, President of the British Board of Trade, in a speech before the Croydon Chamber of Commerce on November 23d, is reported to have said that Great Britain

had more to fear from the United States than from Germany in industrial competition. "The facts are serious," he continued, "and call upon us for the exercise of all our powers to enable us to maintain our position in the commercial world. There is no doubt the United States are executing orders which ought to be executed here. As we all know, an American firm obtained the contract for the Central Underground Railway (of London), as its bid was lower than those of the English concerns and it could deliver the supplies three months ahead of the British tenders. Many important Continental orders have gone to America. The same is to be said of Egypt and Japan, where the Americans are doing work that Englishmen should have done."

THE conductors of the London *Academy* have devised a successful plan of advertisement in selecting a British Academy of Letters and its forty 'Immortals.' With the exception of two or three superannuated giants and half-a-dozen contemporary men of letters, the list seems to be chiefly remarkable as an exhibition of the mediocrity of British literature. The only excuse for mentioning the proposed Academy in this place, however, is to call attention to the fact that it does not contain the name of a single man of science. It is probably true that there is now in Great Britain no man of science who is also a man of letters as Huxley was; still if philologists such as Professor Skeat and Professor Jebb, and historians such as Bishop Stubbs and the Rev. Dr. Gasquet, are included among the forty Olympians there seems to be no reason why men of science such as Lord Kelvin, Professor Foster, Professor Sidgwick and Mr. Galton should be excluded.

THE fiftieth anniversary of Professor Virchow's joining the teaching staff of Berlin University was celebrated on November 6th. The *Lancet* states that in 1847 Professor Virchow, who had previously belonged to the Army Medical Staff, was appointed a *privat-docent* at the University, but political considerations were all-powerful after the revolutionary troubles of 1848, and as he was known to hold democratic opinions he was under the necessity of leaving Berlin and accepting a professorship

at Würzburg, in Bavaria. His exile, however, did not last very long, for as far back as 1856 he was elected professor of pathological anatomy in Berlin, an appointment which he still retains. On account of Professor Virchow's infirm state of health the jubilee proceedings were of a more private character than would have otherwise been the case, being limited to addresses of congratulation delivered by the rector of the University and the dean and professor of the medical faculty. The rector Professor Schmoller, referred to Professor Virchow's achievements not only as a physician and a pathologist, but also as a biologist and as a savant whose methods of research had influenced every branch of human knowledge. The dean, Professor Huebner, eulogized him as a *privat-docent* of an altogether superior order—a teacher not only of students, but also of professors. At an age when young men were, as a rule, far from having mastered what had been already discovered he succeeded in solving the most difficult problems of biology. Professor Virchow in his reply pointed out that he was happy in the knowledge that a body of men now existed in German universities strong enough not only to maintain the principles laid down by him, but also to continue the work in the light of modern developments. He felt that his work was done and that he was now entitled to retire from his academical position, especially after having succeeded in obtaining a promise from the government that a new and modern pathological institute and museum would be constructed after his designs. A great number of telegrams, letters and other marks of Professor Virchow's great popularity were received by him during the day.

THE National Photographic Record Association of Great Britain, to which we have already called attention, have sent out a circular in which they state that well-wishers of the Association, the subscription fee for which has been fixed at a small sum with the object of enlisting wide and general support. Photographers and others can assist by contributing photographs (which must comply with the regulations set forth in the by-laws), or by acting as honorary agents and collectors in their respective localities. The Council look for gen-

erous support from photographic and camera clubs throughout the country, as well as from individual amateur photographers, who must now form a complete network of workers over the whole British Islands. The Council also appeal to the large and important professional class of photographers for copies of rare and especially interesting pictures taken by them. From scientists, antiquarians and others assistance is desired in searching among the rich stores of old and neglected negatives taken in past years which are known to exist, the identification of which gets more difficult as time passes, and also by using influence with their amateur photographic friends in inducing them to seize opportunities of recording passing events. Others may render valuable help by purchasing pictures from dealers and presenting them to the national collection, thus rescuing records which might otherwise be lost. In the course of the present jubilee year there must have been many thousands of photographs taken of local celebrations, which, if brought together, would form a most valuable chapter of national history, and it may be remarked in passing that it should be born in mind that a single picture of historical interest will always be acceptable. In conclusion, the Council wish it to be understood that there is no thought of competing or clashing with the excellent work of the same kind which is being so well done by the several county photographic survey associations, such as those of Warwickshire, Worcestershire, Yorkshire, Cheshire, etc., in their commendable efforts to form local collections, but rather a hope is entertained that such useful work may be encouraged by loans being made from time to time from the national collection, before being deposited in the British Museum, of interesting pictures from other localities for the purposes of exhibition.

*The Botanical Gazette* states that the Seaboard Air Line Railroad, which extends from Portsmouth, Va., to Atlanta, Ga., has inaugurated a novel system of instruction of the communities along its territory. During the present season it has been holding one-day farmers' institutes, all illustrative material and appliances and the force of instructors being transported from place to place in a train of cars especially fitted up

for the work. It is proposed to establish experimental farms every ten miles along the whole line, twenty-eight having already been organized.

At the first meeting of the present season of the Royal Geographical Society, the President, Sir Clements Markham, made an address in which he says, according to the report in the *London Times*, that the recess had been signaled by the publication of two important geographical works—the admirable monograph on British Central Africa, by Sir Harry Johnston, with its fascinating chapters on the scenery and the physical aspects of that region; and the ‘First Crossing of Spitzbergen,’ by Sir Martin Conway; while they had themselves brought out Sir William Macgregor’s interesting paper on ‘British New Guinea’ in the form of a small volume. There had also been much activity in the field. In Africa, Mr. Cavenish, who only completed his twenty-first year last May, had made a very remarkable journey from Berbera, across the Somali country, to the river Jub, and then inland to Lake Rudolf. He shared with the late Captain Böttger the honor of being the first to explore the western shores of that lake. With regard to Siam they might expect another communication from Mr. H. Warington Smyth. In Central Asia the labors of Dr. Sven Hedin, which had been continuous during several years, were of great geographical importance. Not less important and quite as interesting were the explorations now being carried on in the Afridi country by their gallant associate, Sir William Lockhart. They must all feel enthusiastic on reading of the skill and ability with which his old friend was conducting a most difficult campaign, and of the brilliant dash and devotion of the Gordon Highlanders and other troops who were serving under him. As Fellows of that Society they rejoiced that the success of their arms also entailed successes for the cause of geography. Their friend and associate, Mr. Fitzgerald, was also returning from his arduous examination of Aconcagua, which was believed to be the loftiest peak in the Chilean Andes. There would, so far as he was aware, be no new work from the Antarctic regions during the ensuing season, unless, as he hoped, the Belgian expedition,

commanded by M. de Gerlache, should be able to send news of any discovery before the close of the season. But the efforts of their Council to procure the dispatch of a British Antarctic expedition had never ceased. Meanwhile, Sir George Newnes had supplied funds for a Norwegian enterprise, to be conducted by Herr Borchgrevink. In the Arctic regions there had been much activity this summer, and it was reported that it was the most open season that had been known for many years. They now had to welcome Mr. Jackson, Mr. Armitage, and the other members of the expedition on their safe return, and to congratulate Mr. Harmsworth on the valuable results of his patriotic munificence. Following the President’s address, Mr. Frederick G. Jackson lectured on the scientific results of the Jackson-Harmsworth expedition.

At the opening meeting of the Linnæan Society, London, an interesting collection of zoological and botanical exhibits collected by the Jackson-Harmsworth expedition was shown by Mr. F. G. Jackson, the leader, and Mr. Fisher, the botanist of the expedition, the former also exhibiting upon a screen a number of photographs of animals and birds which inhabit the Arctic regions. Some lantern slides of marsh birds and their nests from photographs recently taken in Spain and Holland were shown by Mr. Reginald Lodge. Following a discussion upon these exhibits, Sir John Lubbock, M. P., read a paper on ‘The Attraction of Flowers for Insects,’ in reply to three memoirs recently published by Professor Plateau. According to the report in the *London Times* Sir John Lubbock explained that his view was, like that of Sprengel and Darwin, that we owe to insects the beauty of our gardens and the sweetness of our fields. To them, he said, flowers were entitled for their scent and color. Not only had the present shapes and outlines, brilliant colors, the sweet scent and the honey of flowers been gradually developed through the unconscious selection exercised by insects, but this applied even to minor points, such as the arrangement of lines and the different shades of color.